UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
A REGION 4
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4WD-NSMB 9/29/04

MEMORANDUM

SUBJECT: Response to Recommendations/Comments from the National Remedy Review Board for the Barber's Orchard Superfund Site

FROM: Winston A. Smith, Director
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TO: JoAnn Griffith, Chair
National Remedy Review Board

This memorandum is in response to National Remedy Review Board's memorandum dated January 27, 2004. In that January 2004 memorandum, the Board offered a number of recommendation and/or comments for the Region to consider when deliberating the remedial action for the Barber Orchard Superfund Site located in Waynesville, Haywood County, North Carolina.

The National Remedy Review Board's comments/recommendations are repeated below in *italicized text* followed by the Region's response.

First bullet:

The Barbers Orchard site apparently was listed on the basis of leaks and spills from mixing, storage, and distribution of pesticides. EPA policy suggests that orchard land areas where agricultural chemicals have been properly applied resulting in soil contamination should not be listed on the NPL. Although this policy does not specifically refer to orchard lands that are parts of NPL sites, other regions have interpreted this policy to suggest that Superfund action generally is not appropriate in areas where agricultural chemicals were properly applied and have determined to not address such land areas. The region's proposal to extend the scope of the remedy beyond the areas immediately impacted by agricultural mixing and distribution activities appears inconsistent with how the policy has been interpreted and implemented nationally. It could also make it difficult to differentiate between residential areas defined as part of the NPL site and immediately adjacent orchard lands which have been developed and seem to exhibit similar levels of soil contamination. The board recommends that the region provide a clear rationale for expanding the scope of

the cleanup beyond the pipeline area into former orchard lands intended for residential development in apparent conflict with the national policy.

Region's Response:

The HRS package does not define the Site. Prior to Headquarter consenting on proposing this Site for the NPL, Larry Reed was briefed. In that June 2000 briefing, the following highlights were made:

- Scope of Remediation - EPA Region 4 Proposes to Address Entire Area as a Whole
    - Difficult to distinguish between CERCLA-eligible areas and those affected by pesticide application
        - Migration of CERCLA-eligible contamination to areas otherwise affected only by pesticide application
        - Surface soil mixing during grading and landscaping for residential development
    - Addressing the site piecemeal would likely result in re-contamination of remediated areas

Second bullet:

Given the board's concern as expressed in comment #1 above, the board recommends that as an alternative to cleanup of undeveloped property, the region consider requiring the appropriate level of local government to implement institutional controls. These controls would require the property owners or developers to sample for and remediate arsenic prior to construction on the site.

Region's Response:

A $425,000 Federal grant was obtained as part of the funding the County procured for extending a municipal water line to the Orchard area. Consequently, the Region conduct an environmental review under NEPA. In issuing a "Finding of No Significant Impact", the Region included the following language in the "Special Grant Condition" section. The "Special Grant Condition" states "The County must require all residential sites in the Barber Orchard community to be sampled for lead and arsenic contamination prior to construction on those sites. If lead and/or arsenic levels are found to exceed EPA's remedial action level, the County must require the sites to be remediated before construction on those sites is permitted." The County Board of Commissioners adopted this language in early 2004.

It is the Region's expectation that eventually 70-75% of the orchard will be developed as residential. Below is an approximate break down:

Currently already residential	80 acres
Replanted as commercial apple orchard	10 acres
Being developed/planned to be developed as churches	20 acres
Currently developed as commercial/light industrial	30 acres
Proposed to be developed as commercial/light industrial	30 acres
Proposed to be developed as residential	236 acres
Allowed to return to its native state/unbuildable	32 acres
Total	438 acres

Institutional controls (deed recordation and restrictive covenants) have been included in the selected remedy for those properties not to be remediated as part of the Site clean-up. The approach of requiring the property owners to remediate their own property is not considered practicable and may not be enforceable. Below are significant drawbacks to this approach:

- thoroughness of clean-up effort implemented (consistency),
- could leave behind a patch work of clean and dirty properties,
- responsibility for maintaining an inventory of clean/unclean properties,
- over-sight of each individual clean-up effort,
- covering contaminated soils with a veneer of clean soil (most likely method to be employed by property owners) does not truly eliminate the problem,
- if property owners do elect to excavate soils, still have the problem of disposing of soils,
- the length of time to complete the overall clean-up,
- and the strong potential for surface run-off impacting previously cleaned properties.

Third bullet:

The board recognizes that part of this 400-acre site is still an operating orchard and includes other commercial property. The region stated that it does not have any clean-up plans for this portion of the site. The board is concerned that this area may be developed in the future with property owner(s) desiring cleanup at that time. The board recommends that the region include actions to address this issue by, for example, requiring institutional controls restricting residential develop without prior cleanup by the property owners.

Region's response:

Approximately 10 acres has been replanted with apple trees by the owner of a nearby active commercial orchard. The Region concurs that the owner of this property as well as the owners of the other non-residential properties should be persuaded to place perpetual restrictions on their property, however, under State law, the owners must volunteer to place this restriction on their property. The State can place deed recordations on these properties without the property owner's consent.

Fourth bullet:

The package as presented appeared to define soil as a principal threat waste. Given that the soil is only marginally contaminated, the board recommends that the region clarify that the principal threat wastes are those associated with the pipeline distribution system, mixing areas, and associated residues.

Region's response:

The Region concurs that the pipeline distribution system, mixing areas, and associated residues are the principle threat wastes. This will be clarified in the Record of Decision (ROD).

Fifth bullet:

The package presented to the board identified several remedial action objectives (RAOs) for soils which do not appear consistent with the proposed cleanup. For example, sediment was identified as part of the RAOs; the soil RAO was related to migration of ground water; and the residual risk levels in the RAOs did not match the cleanup criteria. The board recommends that the RAOs be revised to be consistent with final cleanup criteria and the proposed remedy.

Region's response:

The remedial action objectives (RAOs) will be consistent with the final remedial criteria.

Sixth bullet:

The five acre grid used in remedial investigation sampling may have led to a significant over-estimate of excavation volume. The board suggests that the region refine the volume estimate, cost estimate and potential disposal cell requirements by characterizing the contaminated area and depth profile for the distribution system area and spray areas separately.

Region's response:

As conveyed in the Boston presentation, it was the Region's intention to more accurately delineate the areas of contamination prior to initiating the remedial action. As of August 2004, the Region has sampled nearly 90% of the acreage within the Orchard. This additional analytical data fulfills two roles: first, it allowed the Agency to inform Haywood County and the property owners which properties can be developed without remediation activities and secondly, it allowed the Agency to more accurately define the aerial extent of contamination and more accurately estimate the volume of contaminated soil at the Site.

The RI estimated 320,000 cubic yards, the revised estimate is 209,000 cubic yards.

It is the Region's intention on using XRF during the remedial action to fine tune areas requiring excavation.

Seventh bullet:

The board notes that the region is proposing a more costly alternative which includes off-site disposal. The board recommends that the region investigate less costly alternatives, protective of human health and the environment, such as:

-- Disposal at a nearby county landfill, after appropriate testing of contaminant mobility in a landfill environment (e.g., to assess concern re arsenic speciation in a reducing environment);

-- In-situ treatment with possibly phytoremediation or deep tilling with binders, for undeveloped land; and/or

-- Combinations of existing alternatives, leading to minimal off-site disposal.

The board encourages the region to work closely with the state to evaluate these on-site treatment or disposal options.

Region's response:

The Region has continued to explore less costly alternatives than disposing of soils in Johnson City, TN. The original estimated volume of contaminated soils was 320,000 cubic yards which Haywood County contended would utilize 7-10 years of their landfill capacity. Therefore, the County was not willing to take this volume of soil. The State will not support an on-site landfill. After the estimated volume of contaminated soil was revised, the Agency renewed discussions with Haywood County. The County has agreed to accept the soils but the County did state that this will require them to expand its landfill ahead of schedule.

Eighth bullet:

The board notes that, based on an exposure point concentration of 36 mg/kg, on average, the levels of arsenic are only marginally elevated. The region informed the board that they may be able to support a cleanup level of 40 mg/kg, based on an estimated 30 year exposure which includes both children and adults, rather than a subchronic 6 -year child exposure. The 40 mg/kg cleanup level could significantly lower the volume to be remediated and the associated cost. The board recommends that the region develop cleanup levels based on a 30 year exposure, which is more appropriate for use with chronic toxicity data. However, the board also recommends that the region confirm that using a higher arsenic cleanup level does not result in leaving organic pesticide wastes in place above risk-based levels.

Region's response:

An arsenic cleanup goal of 40 mg/kg was incorporated into the ROD. This will not result in leaving elevated levels of other contaminants above risk-based levels.

Ninth bullet:

The board notes that the maximum detected concentration of arsenic was used to assess exposure to subsurface soil. Also, it is unclear to the board whether this sample was taken on-site. The use of a maximum concentration implies that a construction worker would be exposed only to this maximum concentration, resulting in an overly conservative assessment of risk. The region should review the location of the samples used for risk analysis and review the construction worker scenario, in order to determine whether the assumptions used are appropriate.

Region's response:

Although bioavailablility data for Site soils was not developed, this was qualitative factor in raising the cleanup goal for arsenic from 20 mg/kg to 40 mg/kg.

The following language is proposed to be incorporated into the Record of Decision:

"The Proposed Plan presented 20 mg/kg as the cleanup goal for arsenic whereas, **Table 18** of this ROD specifies the cleanup goal for arsenic in soil will be 40 mg/kg. The rationale for changing the cleanup goal is based on a review of the arsenic toxicity criteria. The previous cleanup level of 20 mg/kg was based on the use of a chronic reference dose and a hypothetical residential child receptor having a 6 year exposure duration of a child receptor. It is appropriate to use the subchronic reference dose in this case. Applying the subchronic reference dose of 5E-3 mg/kg-day to a child receptor exposed for 6 years gives a preliminary remediation goal of over 300 mg/kg. However, because arsenic is a known human carcinogen by the oral route, the preliminary remediation goal will be reduced to 40 mg/kg, representing a 1E-04 cancer risk, and hence, protective for both the cancer and noncancer endpoints."

The Region reviewed the construction worker scenario, the major risk-related component for this scenario is related to being exposed to contaminants in the surface soils and not subsurface soils (refer to Table 8 in ROD).

Tenth bullet:

The board also notes that arsenic bioavailablility was not considered in calculating risks or developing cleanup levels. The board recommends that the region consider whether a higher yet equally protective cleanup level would be worth the expense of in-vivo bioavailability studies. The board also recommends consideration of in-vitro bioavailability studies, which while not as scientifically well-established, can provide an indication of the general bioavailability and can be used to manage the uncertainties in risk and cleanup levels.

Region's response:

Although bioavailablility data for Site soils is not available, this was definitely a qualitative factor in raising the cleanup goal for arsenic from 20 mg/kg to 40 mg/kg.

Eleventh bullet:

The package presented to the board prior to the meeting discussed risks associated with contaminants other than arsenic and lead and yet only presented soil clean-up criteria for arsenic and lead. At the meeting, the region clarified that the cleanup proposed for arsenic and lead would also address the risks from the other contaminants. If this is the case, the board recommends that the region state so in the decision documents.

Region's response:

Table 10 in the ROD lists cleanup goals for all the Site specific chemicals of concern.